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HOMEMAKER PENSIONS AND LIFETIME REDISTRIBUTION

by

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The analysis presented in this paper is the responsibility of the author and does not necessarily represent the views or policies of Statistics Canada.

ABSTRACT

Homemaker Pensions and Lifetime Redistribution

There has been considerable public debate in Canada on the merits of proposals to extend coverage under the public earnings-related pension system (the Canada and Quebec Pension Plans or C/QPP) to homemakers. This paper presents an analysis of one such proposal put forward by a Parliamentary Committee in 1983. The analysis considers both the likely costs and the redistributional impact of this homemaker pension proposal, based on a monte carlo lifecycle microsimulation model. The main results are first that the proposal tends to be mildly redistributive from higher to lower lifetime income groups. Secondly, the proposal is of not as much benefit to women as might be expected - it is almost equal in value to men and women. This later conclusion is the result of the fact that the homemaker pension provision was part of a package that also included splitting of pension credits accrued during marriage.

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List of Abbreviations

CPI	consumer price index
OAS	Old Age Security pension
C/QPP	Canada and Quebec Pension Plans
PTF	Parliamentary Task Force on Pension Reform
NAC	National Action Committee on the Status of Women
GIS	Guaranteed Income Supplement
SQ	status quo
HP	PTF's package of homemaker pension reform proposals
DEMOGEN	simulation model used to produce synthetic sample database
LIPPS	Lifetime Income and Pension Policy Simulation model
EAU	equivalent adult unit

Introduction

Since the beginning of the 1980s, the public debate on pension reform in Canada has become three-cornered. There are the two usual antagonists -- business and labour. The newcomers to the debate are organized women's groups. One of their key proposals has been to extend coverage under the public earnings-related pension system to homemakers.

Homemakers are generally defined to be "non-working" spouses caring for children, typically stay-at-home mothers. The popular pressure for homemaker pensions derives first from the fact that many of the elderly poor are women, particularly those who have worked all their lives in the home rather than in the paid labour force, and are widowed or divorced. More generally, support has come from the widespread feeling among women that homemaking is indeed work of real economic value that was insufficiently recognized in a male-dominated public policy environment. Neither business nor labour support the homemaker pension proposal.

In 1983, a special Parliamentary Task Force on Pension Reform (hereinafter PTF) was established to look into a wide range of issues relating to Canada's pension system. As part of a package of political compromises, the PTF made a detailed proposal for a homemaker pension. This proposal was subsequently part of the election platform of the Conservative party which won a sweeping victory in the 1984 federal election. At the present time, federal-provincial discussions are underway to consider this and alternative homemaker pension proposals. It continues to be a controversial idea.

The purpose of this paper is to present some initial results regarding the prospective impact of the PTF's homemaker pension proposal. These results are derived from a new policy-oriented microsimulation model of Canada's income tax and public pension system.

The homemaker pension proposal poses a number of challenges purely from an analytical viewpoint. As a pension proposal, it is essential that it be examined in a lifecycle context. Pension benefits are calculated based on pre-retirement earnings and demographic status; and evaluation of the relative

adequacy of post-retirement benefits requires micro data on pre-retirement economic status. In the absence of longitudinal data, however, such a life-cycle analysis is only feasible using synthetic or simulated data. Such data have been produced using the DEMOGEN model (Wolfson (1987b)). These synthetic longitudinal microdata were designed to fit into a newly extended version of the Lifetime Income and Pension Policy Simulation (LIPPS) model originally developed for the PTF and subsequently maintained and updated by the federal Department of National Health and Welfare.

The LIPPS model as it was originally used by the PTF for the design of their homemaker pension proposal used "hand drawn" or stereotypical family lifecycle histories. These histories included marriage, fertility, divorce, and employment income. One area of particular interest was in the improvements in retirement income provided to women by the homemaker pension in the event of a divorce prior to reaching the pensionable age, 65 (eg. see Table 3.3 in the PTF Report (1983)).

One weakness of this kind of analysis is that there is no empirical basis upon which to judge just how representative or realistic the various stereo-typical cases are. The DEMOGEN model addresses this weakness by providing a synthetic longitudinal microdata sample of an age cohort. Because of the details of the PTF homemaker pension proposal, a challenge to the DEMOGEN model is to capture reasonably the longitudinal inter-relationships of fertility and labour market behaviour for women.

The plan of the paper is first to describe the current public pension system in Canada, and then the PTF homemaker pension proposal. Next the structure of the DEMOGEN model is briefly sketched. Finally the results of the simulations are presented.

Canada's Public Pension System

Canada's public pension system consists basically of three main programs. The oldest is a universal flat rate transfer payable to all Canadians age 65 or older (except recent immigrants), the Old Age Security pension or OAS. The OAS was introduced in 1927 as a means-tested benefit, and has had the form of a universal demogrant since 1952. The benefit is about $3,600 per person per year (in 1987), and currently amounts to about 14% of the average industrial composite wage in Canada. The payment is fully indexed to the CPI and is also fully included in income for income tax purposes. OAS is financed out of general federal revenues.

In 1966, the two other major public pension programs were introduced. One, the Guaranteed Income Supplement or GIS, is an income-tested top-up to the OAS. The GIS is essentially a guaranteed annual income for the elderly, where the basic income guarantees are about $4,300 for a single elderly person, and about $5,600 for an elderly couple. These benefits are reduced by $0.50 for every dollar of other income (except OAS) received by the elderly individual or couple. Thus, an elderly couple could have an income up to $18,400 (including two OAS benefits) before their entitlement to GIS would phase out. GIS is also financed out of general federal revenues, and is not included in taxable income.

The third major public pension program is the Canada and Quebec Pension Plan or C/QPP. This is a contributory earnings-related pension, financed by a payroll tax. The employee plus employer contribution rate has been constant at

3.6% from the inception of the plan up to 1986; it is now legislated to rise gradually over the next 25 years to over 7%. The result will be a continuing fund equal to something over two years of benefit payments. For constitutional reasons, plan amendments require the joint consent of the federal government and a large majority of the provincial governments. The province of Quebec has exercised its option to run the portion of the plan covering its residents itself. (The benefits and contributions under the CPP and QPP are virtually identical.)

The C/QPP provides basically a retirement pension equal to 25% of average pre-retirment earnings, up to a ceiling approximately equal to the average industrial wage. More precisely, an individual's earnings base is the average of all earnings from age 18 to 64, where these earnings are first updated or indexed in relation to the growth in the average wage, less a general dropout of the 15% of the years where updated earnings are lowest. A special additional provision allows those years where an a contributor had children under age seven also to be dropped in computing updated career average earnings, the so-called child rearing dropout. Spouses of plan contributors are entitled to post-retirement survivor benefits amounting to 60% of the contributor's pension.

Recent amendments to the C/QPP allow contributors to begin receiving retirement benefits at any age between 60 and 70 subject to an actuarial adjustment relative to the normal pensionable age in the plans of 65. Also, in married couples, both spouses can receive cheques equal to exactly half their combined pension entitlements. After coming into pay, the pension benefits are updated regularly in line with the CPI.

Because of its different statutory basis and because of its explicit contributory nature, C/QPP benefits are widely viewed by the public as having an entitlement basis, while OAS and GIS are seen more as welfare. This is unfortunate particularly in the case of OAS, which really plays a dual role in the public pension system. First, in conjunction with GIS, OAS provides part of the basic annual income guarantees for the elderly. But second, in conjunction with the C/QPP, OAS provides a major part of the replacement income of the public pension system. In other words, while one objective of public pensions is to assure that the elderly do not live in poverty, another equally fundamental objective is to enable Canadians to maintain their living standards after retirement -- to have sources of income after retirement that replace the income they had received prior to retirement from working. The OAS, when it was made intc a universal demogrant in 1952, was intended to play both an anti-poverty and an income replacement role. In fact, it continues to play a major replacement role; but particularly as revealed by the homemaker pension proposals, the women's movement has tended to ignore this.

The Parliamentary Task Force Homemaker Pension

In 1983, a special Parliamentary Task Force (PTF) was established to look into various proposals for pension reform. The public debate historically had always been between business groups who opposed first the introduction and then the extension of public pensions, and labour, church and social welfare groups on the other side. The debate during the five years prior to the creation of the PTF was similar with business groups opposing any expansion of the C/QPP or OAS (but willing to accept enlargement of the GIS), and labour groups proposing that the basic earnings replacement rate in the C/QPP be doubled from 25% to 50%. The newly emerging organized women's position supported the labour

movement's proposal to double the C/QPP, but devoted most of their effort to a proposal to extend coverage under the C/QPP to homemaking work. The Liberal government of the day, in their Green Paper on Pension Reform (1982) published the year before the Parliamentary Task Force was agnostic (i.e. internally divided) on the question of doubling the C/QPP, but was clearly opposed to homemaker pensions. As part of a broader political compromise package, the Liberal and Conservative majority on the PTF agreed to propose a homemaker pension, partly in lieu of expanding the C/QPP in the manner proposed by both labour and women's groups.

The main elements of the PTF homemaker pension proposal followed the specific proposal of the National Action Committee on the Status of Women (NAC). This was to treat anyone who was a homemaker as if they had earnings in a year equal to half the average wage, even if their actual earnings were less than this or zero, for purposes of subsequent calculations of updated career average earnings in the C/QPP. A homemaker was defined by the PTF as any adult caring for a child under age 18, for a spouse, or for a dependent and infirm relative living in the same house. Contributions in respect of these deemed homemaker earnings would be waived if there was no spouse with earnings above half the average wage, payable in full if there was a spouse with earnings above the average wage, and phased-in in between.

It is useful to note that this homemaker pension is both a bit "GIS-like" and "OAS-like". It essentially ensures a minimum flat rate pension for homemakers of one-eighth of the average wage (half the average wage being the minimum deemed earnings times the 25% gross replacement rate in the C/QPP) times the fraction of the working age years that the person qualifies as a homemaker. In this flat rate aspect, it is "OAS-like". It is also "GIS-like" in that the homemaker pension tops up earnings in any year below half the average wage. An extra dollar of earnings below half the average wage thus is fully offset by a dollar reduction in the imputed homemaker "earnings" for C/QPP purposes.

In addition, the PTF proposal would essentially replace both the 15% general dropout and the child rearing dropout with a general dropout of 25% of the lowest earning years (including years with deemed homemaker earnings). The PTF also proposed that upon retirement, before updated career average earnings were computed, but after deemed homemaker earnings were imputed, the earnings of spouses for the years in which they were married were to be split or effectively averaged. Thus, for example, in a year where the husband had earnings equal to the average wage, and the wife had no earnings but qualified as a homemaker, the wife would be deemed to have had earnings equal to half the average wage, and their respective earnings would then be averaged so that they were each treated as if they had earnings in that year equal to three-quarters of the average wage.

This proposal was called credit splitting. Credit splitting was already in place in the C/QPP in the event of divorce. Extending credit splitting to the event of retirement would mean that the homemaker pension, even if it accrued initially in respect of homemaking by the wife, would ultimately benefit both the wife and the husband in roughly equal measure (not exactly equally because of the greater average longevity of women).

Credit splitting should be distinguished from pension splitting. Under the latter, once pensions are in pay for both spouses, the amounts received by each spouse are set equal to the average of both of their individual entitlements. This is important because the C/QPP have been amended since the PTF to

allow pension splitting at retirement; the credit splitting proposal was not adopted. Such pension splitting has no effect on the total liabilities of the C/QPP; it merely rearranges the amounts on the cheques. Credit splitting, on the other hand, would increase pension benefits. This follows from the dual facts that men tend to have higher earnings, and women tend to live longer. Credit splitting tends to shift the pensionable earnings base toward individuals with greater life expectancy.

Currently, the C/QPP provide a 60% post-retirement survivor pension to the spouse of a decreased contributor. With credit splitting and no other changes, this 60% survivor pension would effectively become an 80% survivor pension (100% of one half of the pension plus 60% of the other half). Thus, the PTF also proposed that in the context of credit splitting, the survivor pension be reduced to 30%, to yield an effective survivor pension after splitting of 65% (100% of one half plus 30% of the other half of the couple's combined retirement pensions).

All of these elements of the PTF homemaker pension proposal are included in the simulations to be described. Most of the time, these elements will be considered as a complete package. Sometimes, however, the package will be divided into three constituent sets of reforms. One is the homemaker pension per se -- deemed earnings of half the average wage for homemakers whose actual earnings are less, and contributions by spouses (where present) in respect of these deemed earnings phasing in in relation to their own earnings. The second constituent set is the dropout changes -- replacement of the general 15% and child rearing dropouts of earnings years by a general 25% dropout; and the third constituent is credit splitting -- substitution of credit splitting for pension splitting, and increasing the effective survivor pension from 60% to 65%. (However, we have not included the PTF proposal for a pro-rated survivor pension on divorce.)

Thus the PTF homemaker pension package is essentially the same as the proposals of the National Action committee on the Status of Women (NAC), the leading women's group on pension reform. The major difference is that the PTF package does not include a doubling of the basic C/QPP replacement rate from 25% to 50%. At a more detailed level, the PTF package includes changes to the drop-out provisions somewhat different from those proposed by NAC. Also,k post-retirement survivor pensions are reduced under the PTF proposals, but not phased out entirely as under the NAC proposals (subject to a "grandmother clause"). Both agree on the homemaker pension itself and on credit splitting. NAC would presumably agree with the implicit income-testing of the extra contributions associated with the homemaker pension since this was one area of criticism of their original proposal -- that low income husbands would face increased payroll taxes in respect of their homemaking wives.

Other criticisms of homemaker pensions contained in the federal government's 1982 Green Paper were first that they would be inequitable. The homemaker pension would only recognize the unpaid work of stay-at-home moms, and would do nothing for a couple where the mother worked for pay outside the home during the day and did housework and childcare during the evenings and weekends. (Also, women in well-off households who could afford to stay at home and hire a housekeeper would be entitled to a homemaker pension even though they did no homemaking work.) Second, without denying that homemaking is work of real economic value, the Green Paper questioned why it should be pensionable, since homemaking activity does not ceas abruptly at retirement like employment income. Finally, the Green Paper pointed out that credit-splitting in particular would provide substantially more benefits to women, and thus it

was not necessary also to introduce a special homemaker pension provision given such other reforms to the C/QPP. More recently, the CPP Advisory Board (1987) has made similar arguments. Further criticisms (e.g. Townson, 1987) have also pointed out that the homemaker pension proposal could result in a two-earner couple receiving lower C/QPP retirement benefits than a one-earner couple that had exactly the same total earnings.

The objective of this paper is not to give a complete and exhaustive evaluation of the homemaker pension proposal. The arguments just cited are intended rather to give the reader some feeling for the nature of the policy debate. The most interesting aspect of the debate from our perspective is the almost complete lack of quantitaive analysis of the expected impact of the proposals. This paper presents the first detailed micro-level analysis of homemaker pensions in Canada. In order to understand the basis for this analysis, we turn next to the underlying demographic and income data.

Family Life Histories and the DEMOGEN Model

As noted at the outset, the PTF homemaker pension poses a considerable analytical challenge. The proposal combines changes to the dropout provisions in the C/QPP with provisions to replace actual earnings in a year with deemed earnings when the actual earnings are low and the adult in question has a particular demographic status (i.e. homemaker). This means that any empirical analysis of the prospective impact of such changes requires a database that reasonably captures longitudinal patterns of fertility and earnings variability, and their correlation. The DEMOGEN simulation model is designed to provide just such a database by the explicit construction of realistic, albeit synthetic, family life histories. We must rely on synthetic data because actual longitudinal data simply do not exist, nor are they likely to be created with sufficient detail for the foreseeable future.

At present, the model of the CPP used by the Federal Department of Insurance for purposes of actuarial reports to Parliament and evaluation of reform proposals does not rely on explicit life history data. It instead draws on tabular data on the population broken down, for example, by sex, age group, and range of earnings. It can be characterized as a semi-aggregated or cell-based model. Similarly, multi-state life tables like those used for marital status are cell-based models.

The DEMOGEN model, on the other hand, builds up a cohort from explicit synthetic family life histories, which are in turn available for individual scrutiny. It is thus necessary to make sure that each individual family life history is plausible and realistic, while at the same time ensuring that a set of such families is statistically representative. This implies much more rigorous standards than, for example, are involved in cell-based models and multi-state life tables.

Family life histories constitute a complex set of objects. Over a lifetime, individuals come together, spawn new individuals, separate, and recombine. A family life history must therefore encompass at least a core male-female pair who may marry, have children, and then possibly divorce and remarry. A single observation of a family life history could correspond to a unique sequence of many different cross-sectional family sizes and types -- for example first a male-female pair of unattached individuals, then a childless married couple, a couple with one child, a couple with two children, a single

parent with two children, a remarried couple with children, an "empty nest" couple, and finally a widow.

DEMOGEN is designed to produce a representative sample of complete family life histories. This task is achieved using techniques of monte carlo simulation. This means that the sample is built up, essentially one family at a time, by the repeated use of random number generators applied to a variety of sets of transition probabilities. Quite a diverse set of transitions and hence conditional transition probabilities are explicitly incorporated. Table 1 gives an overview of the various processes that have been built into the DEMOGEN model.

As the starting point in the simulation process, DEMOGEN first creates a pair of core adults, one male and one female. Then the processes in Table 1 are applied in sequence to flesh out the pair's socio-economic life history. First, ages at death are drawn from a random number generator designed to reproduce currently projected male and female distributions of life expectancy. Then, another random number generates the female's age at first marriage, where first marriage propensities are determined as a function of age. The pair may of course never get married. If they do, the computer model then proceeds to find the differences in ages between the male and female by drawing a random number from a distribution of husband-wife age differences conditional on the wife's age at marriage. Then the male's birth year is adjusted accordingly relative to the female's birth years.

In essence, DEMOGEN creates a sample of a single birth cohort. Core females and never-married core males are considered all born in the same year, say T, while married males and ancillary adults who enter the family via remarriage end up being born in a range of years (eg. T-15 to T+10) depending on how much older or younger than their spouses they are.

As can be seen in the description so far, the simulation processes are generally sequential: male-female pairs do not get married after they have died, nor do they get divorced unless they were married. An exception is fertility which is not conditional, for example, on marital status but only on age and parity. As a result, never-married women in the model have exactly the same fertility as married women. (The Canadian census does not ask fertility questions of never-married women, so a more appropriate fertility module cannot be easily estimated. The inclusion of "promiscuous spinsters" is not expected to affect significantly the results presented below, since most women do get married before they are very far into the child-bearing age range.)

Remarriage can only occur after a marriage has ended by divorce or death of one spouse. The divorce module is quite rich since it was based on a detailed analysis of Statistics Canada's 1983 Family History Survey (Rowe 1986). Remarriage propensities are conditional on age, sex, and whether divorced or widow(er)ed. (It would probably be important to condition remarriage on the presence of children of various ages, just as there are probably significant differences in fertility by marital status, and significant differences between legal and common law unions. As appropriate data are derived, they will be incorporated into future versions of the relevant modules of DEMOGEN.)

The determination of employment income in DEMOGEN follows three basic steps. First, school leaving age and educational attainment are determined, based on distributions by age and sex. Then year by year labour force participation is generated, as developed in Picot (1986). These labour force

TABLE 1: Processes Represented in Demogen

Process or Event	Conditional Upon
Death	age, sex
First Marriage (female dominant)	age
Husband's Age	wife's age at first marriage
Fertility	age, parity
Custody	marital status
Child Separation	age, parity
Divorce	age, duration of marriage, presence of children, age at marriage
Remarriage	age, sex, divorce versus widow(er)
Second Spouses's Age	marrying person's age, sex, prior marital status
School Leaving and Educational Attainment	age, sex
Labour Force Participation Year by Year	age, sex, marital status, presence of children by age group, educational attainment, duration in state
Labour Market Earnings	age, sex, labour force attachment (a function of year by year labour force participation)

transitions have been estimated from longitudinal recall data from the 1983 Family History Survey, and are based on the labour force experience of 14,000 respondents in the 1974-83 period. They are highly dependent on the demographic situation as it develops over the lifecycle. For example, whether or not a women enters employment is conditional on her marital status, whether or not she has any infant children, and how long she has been out of the labour force.

Finally, actual dollar earnings levels are generated based on stochastic processes developed in Kennedy (1986). These processes were estimated from a sample of 50,000 actual 18 year fragments of age-earnings histories of CPP contributors. One result of this analysis was to reject a first order Markov assumption, so that an autoregressive process with substantial individual heterogeneity is implicit in the model of individual earnings dynamics.

The DEMOGEN Sample

The base case scenario for DEMOGEN draws on 1980-82 age-related propensities for mortality, marriage, fertility, and remarriage and 1984 distributions of husband-wife age differences. Divorce is similar to Rowe (1986), education and labour force participation are as in Picot (1986) and earnings are from Kennedy (1986). As a result, the birth cohort generated by the simulation is not necessarily like any actual cohort embedded in real calendar time. Rather it is analogous to a period life table in that it is an approximation of the hypothetical cohort that would result if the base case set of propensities, essentially from the early 1980s, held constant for all time. Validation of a model like DEMOGEN is a complex process. DEMOGEN is creating synthetic data precisely because actual data do not exist. Partial validation (reassurance may be a better word) can be obtained by comparing selected facets of the sample of cohort lifetime family histories with available cross-sectional data. For example, the distribution of nuclear families by size, type (eg. couple, single parent), and age of "head" can be compared with census data; and the distribution of employment income within age-sex groups can be compared with corresponding cross-section data on CPP contributors. These particular comparisons have been made, and are moderately reassuring.

Such comparisons are complicated by the fact than an hypothetical "period" cohort at various ages has to be compared to various existing cohorts at a given point in time, hence at different ages. None of these empirically observed cohorts are likely to be in steady state equilibrium, so they provide only a rough point of comparison to the steady-state period cohort synthetically created by DEMOGEN.

Tables 2 and 3 present a few summary statistics from the sample of 2500 cases produced by DEMOGEN for purposes of the subsequent analysis of the PTF homemaker pension proposal. Each "case" consists of a male-female pair who may never marry, or may indeed remarry. In the latter situation, extra "ancillary" as opposed to "core" adults are created as needed. Tables 2 and 3 focus on the core adults in the sample. Later tables that look at the cohort as a whole may include the ancillary adults as well.

Table 2 focuses on the demographic history of the simulated age cohort. Given the age-specific marriage propensities used, all but 12.1% of the core adults enter into a first marriage. This happens on average at age 24 for the women, and their spouses are on average two years older. Women have their first child, on average, just before they get married. This reflects the birth of children out of wedlock. Such out of wedlock births may be somewhat high as a result of the fact that fertility in the model, while conditional on age of mother and parity, is not conditional upon marital status (- due to a lack of data on fertility by age and birth order to never-married women. Data on births show many infants are born to unmarried mothers under age 25.).

Table 2 further shows that remarriage is much more likely for men than for women, and more likely after a divorce than after the death of a spouse. This latter observation results largely from the later average age at widow(er)hood compared to divorce. With their systematically lower mortality rates, more women survive to age 65 than men - 85.4% as compared to 75.4% (given the assumption in DEMOGEN that both survive at least to age 18). For the 26.5% of ever-married men whose first wife outlives them (row 8.a), she lives on average to the time when he would have been age 87.3. This is relevant to the analysis of public pensions because such males build up not only their own C/QPP entitlement, but also one of considerably longer duration for their wives

TABLE 2: Overview of the Lifecycle Pattern for Key Demographic Events

Key Demographic Event	Core Females		Core Males		Denominator for Percent Affected *
	Average Age	Percent Affected	Average Age	Percent Affected	
1. First Marriage	24.1	87.9	26.1	87.9	All
2. Birth of Children					
a. first	23.8	82.1	25.5	82.1	1
b. second	26.9	67.0	28.6	67.0	1
c. third	29.4	23.3	31.0	23.3	1
d. fourth	30.7	4.4	32.6	4.4	1
3. Divorce	39.3	39.9	41.0	39.9	1
4. First Widow(er)hood	65.5	38.7	68.4	20.0	1
5. Remarriage					
a. after divorce	39.9	61.7	42.5	79.0	3
b. after widow(er)hood	44.0	5.6	48.3	14.1	4
c. both	40.2	34.1	43.0	57.4	3+4
6. Retirement	65.0	85.4	65.0	75.4	All
7. Death	79.0	100.0	73.1	100.0	All
8. Death of Surviving First Spouse					
a. widow(er)hood	82.5	12.8	87.3	26.5	1
b. divorce	81.0	20.0	87.0	38.7	1
9. Death of Surviving Second Spouse	83.7	33.1	91.8	73.9	5.c

* The "Percent Affected" columns show the proportion of individuals "at risk" who experience each demographic event. "All" means every individual of the given sex in the cohort; otherwise the number of the row for the "at risk" group is given. For example, 61.7% of women who were divorced (i.e. women who experience divorce as per row 3) remarry.

Source: DEMOGEN simulation, sample size 2500.

(judging by the figure just noted in Row 8.a as well as the ones in rows 8.b and 9).

Table 3 illustrates the results of the DEMOGEN simulation with respect to labour income. Average earnings (for those with positive earnings) have the usual age profile, and men have characteristically higher earnings than women. It should be noted that the employed/not employed transitions (E-NE and NE-E) shown in the table are not in the same conceptually as transitions into and out of the labour force. Being employed is identified with having positive annual earnings, and this is not necessarily the same as being in the labour force from the viewpoint of monthly labour force surveys. Someone could be out of the labour force for a number of months but still have had earnings during that calendar year. On the other hand, someone could have been counted as in the labour force throughout a year, yet as a result of being unemployed, they may have had no earnings.

The Gini coefficients for earnings may appear a bit high, but it should be noted that they are computed across all individuals in each age-sex group, not just those with positive earnings.

The average transition probabilities are computed from the set of age-earnings profiles generated stochastically by DEMOGEN. As discussed above, the process is quite complex and multivariate. The probabilities shown in the table are computed simply as the fraction of all years following a year with zero earnings (i.e. in the not employed state or "NE") within the given five year age interval that are followed by a year with positive earnings (i.e. employed or "E") for the NE-E transitions, and correspondingly for the E-NE transitions. Women experience higher turbulence in the dynamic pattern of their earnings according to these figures. Even though the transition probabilities are higher for men than women for entry to employment below age 40, fewer men are out of work at these ages so the flows of men into employment are also smaller.

The PTF Homemaker Pension Proposal - Overall Impacts

Given the 2500 synthetic family life histories generated by DEMOGEN, we turn now to an analysis comparing the status quo public pension system to the public pension system proposed by the PTF, in particular the homemaker pension as well as the rest of the package of changes outlined above. These two options will be abbreviated SQ and HP respectively. This part of the analysis relies on the Lifetime Income and Pension Policy Simulation (LIPPS) model originally developed for the PTF, subsequently maintained and updated by the federal Department of Health and Welfare, and newly extended for purposes of this analysis.

The LIPPS model explicitly simulates C/QPP contributions and benefits, OAS and GIS benefits, and personal income taxes (as well as family allowance benefits and unemployment insurance premiums). For each core and ancillary adult in a family produced by DEMOGEN, LIPPS computes lifecycle vectors of C/QPP contributions, retirement pensions, and survivor pensions, OAS and GIS benefits, and personal income taxes. (These are simple accounting calculations in the sense that no feedback is allowed from taxes and transfers to earnings and demographic transitions as produced by DEMOGEN.) Individuals are assumed to do no private saving, so consumption each year exactly equals disposable income, and there is no investment income.

TABLE 3: Overview of Lifecycle Earnings Patterns

Age Group	Core Females					Core Males				
	Positive Earnings		Gini Coef.	Avg. Transition Probability (%)		Positive Earnings		Gini Coef.	Avg. Transition Probability (%)	
	Percent	Average ($000s)		NE-E	E-NE	Percent	Average ($000s)		NE-E	E-NE
18-19	14.2	5.0	.90	16.0	13.1	17.8	6.1	.88	15.3	6.1
20-24	47.6	11.9	.59	20.3	10.7	55.4	14.1	.56	24.7	3.9
25-29	60.5	18.6	.59	13.5	8.1	85.0	23.3	.50	23.6	2.3
30-34	63.3	20.1	.59	10.9	5.6	89.1	29.5	.49	13.9	1.9
35-39	65.2	19.6	.57	9.7	4.9	89.2	33.2	.49	10.9	1.5
40-44	65.8	20.8	.59	6.0	3.4	87.3	33.6	.51	4.2	1.7
45-49	65.7	19.6	.60	5.1	3.1	84.6	32.2	.53	3.7	1.7
50-54	62.2	20.4	.64	2.8	4.4	81.3	31.9	.57	2.1	2.4
55-59	54.1	19.2	.69	1.6	6.1	74.9	30.5	.61	0.8	4.1
60-64	41.6	18.0	.77	0.6	24.0	60.8	26.3	.69	0.2	23.6

Note: "NE" and "E" refer to the states of being not employed and employed respectively. In turn, an individual is considered employed if their earnings in a year are positive. The transition probabilities and Gini coefficients are calculated for all individuals and all years they are alive in each sex and five year age group. Thus, the Gini coefficients cover many person-years of zero earnings.

Source: DEMOGEN simulation, sample size 2500.

In order to run the LIPPS model, three basic inputs are required - a set of family life histories, a policy scenario, and an economic scenario. So far, we have described the one set of 2500 family life histories that will provide the basic population input, and two policy scenarios - the status quo SQ and the PTF homemaker pension proposal HP. The final input, the economic scenario, will be very simple. It will be assumed that everything is in long run steady-state equilibrium and that the rate of increase in both prices and average wages is exactly zero. This economic scenario is also equivalent to one in which all pensions and income tax provisions are fully indexed to increases in the average wage.

This economic scenario may sound patently unrealistic if it is viewed as a zero growth scenario. Alternatively, if it is viewed as an economic scenario where all taxes and transfers are fully indexed to average wage growth, then this is not an accurate reflection of current legislation, except for the C/QPP prior to retirement. As already noted, the OAS is automatically CPI indexed, as is the GIS, while the personal income tax system is now automatically indexed to the increase in the CPI less 3% each year.

Nevertheless, this steady-state scenario is a reasonable starting point in principle for an analysis of public pensions. Given the replacement role of OAS, it seems reasonable to start the analysis by assuming it will retain its current relative importance. Indeed, the PTF made precisely this recommendation. On the other hand, the current government in the May 1985 budget, proposed the opposite -- to move OAS from full CPI indexing to CPI less 3% indexing. While all the other partial de-indexing proposals in that budget were adopted, the federal government was forced to abandon the partial de-indexing of OAS as a result of arguably the strongest wave of popular protest in an area of social policy since the Second World War.

A continuing sequence of ad hoc changes can reasonably be assumed to have the effect of keeping the relative size of the GIS and the personal income tax system at their current levels.

The alternative of abandoning this type of "relative" economic scenario and adopting a "legislated" economic scenario with these divergent automatic indexing assumptions will, of course, yield significantly different results, as shown for example in Wolfson (1987a). For example, assuming OAS is CPI- rather than average wage-indexed with 1.0 to 2.0% real average wage growth would result in OAS playing half or less than half of the role shown in the simulation results below. The choice of indexing scenario for OAS has more impact than doubling the C/QPP replacement rate. This is an issue to which we return in subsequent parts of the analysis.

A final aspect of this simple, no growth, relative economic scenario is that there is no discounting. Equivalently, from an individual's perspective, the rate of discount exactly equals the growth rate in average wages. This implies that an individual feels equally well off over time if he is able to maintain his disposable income at a constant multiple of the average wage. This assumption may be contrary to the orthodox neo-classical view that individuals do discount the future in a way that is reflected by market rates of interest (although after tax, these rates may be quite similar to rates of growth of average wages). However, it does seem a reasonable assumption when individuals come together to discuss how they, as a group, should plan the structure of a social institution which they wish to endure.

Table 4 shows the broad overall results in per capita terms. Men's lifetime earnings average $960,500, about twice those of women. Just over half of men's earnings fall beneath the ceiling for pensionable earnings under the C/QPP which is equal to the average wage, while two-thirds of women's earnings are below the average wage. Women receive much more from OAS and GIS than men. In the case of OAS, this is simply due to their greater longevity. With GIS, this longevity factor is augmented by women's characteristically lower post-retirement incomes - income-tested GIS benefits are larger for them because their income from other sources is lower. (Since no private saving is assumed and hence there is no investment income, the only source of income that affects GIS benefits is C/QPP.)

About three quarters of C/QPP benefits are for retirement; for men alone, however, this proportion is over 85%. Contributions (assuming the current 3.6% employee plus employer contribution rate remained unchanged, contrary to recent amendments) at an average of $7,500 would cover only about 13% of the $56,400 average lifecycle C/QPP benefits. More fundamentally, average lifecycle benefits amount to 7.8% of per capita total lifecycle earnings, or about 13.5% of per capita total lifecycle contributory earnings. This 13.5% figure represents the full cost or entry age normal cost of the C/QPP given the unusual actuarial assumption of a zero interest rate. This is the contribution rate that would be required if the C/QPP were to be fully funded in the same way as a private pension plan. It is also the pay-as-you-go contribution rate that would be required after the plan had become fully mature in a long run equilibrium where the population growth rate was exactly zero, so that the age structure was unchanging.

This 13.5% full cost figure for the current C/QPP is higher than those usually referred to in public debate and discussion. The reader is reminded that these figures are based on the assumptions of no discounting (i.e. in this case zero real yield on any funds), zero inflation, and zero real wage growth. If the C/QPP were costed assuming a real yield or discount factor that was 2% above the rate of wage growth, the cost figures for C/QPP, OAS, and GIS expressed as a percent of total earnings in the last column of Table 4 would be about halved. As a further example, the Chief Actuary, in his most recent report to Parliament on the CPP has calculated the entry age normal costs at 8.1, 9.4 and 10.1% assuming interest rates 1.5, 1.0 and 0.5% above the rate of wage growth respectively (as well as positive real average wage growth; Department of Insurance, 1986,p.75). Thus, when similar discounting assumptions are used, our figures are very close to those produced by the Chief Actuary.

Compared to the status quo (SQ), the PTF homemaker pension package (HP) would increase the overall size of the C/QPP by about 37%, from 7.8% to 10.7% of per capita total lifetime earnings. Thus, even though the labour movement in Canada failed to persuade the PTF to double the C/QPP, the political compromise would still result in quite a substantial apparent enlargement. We say apparent because per capita total lifetime disposable income under the HP would only rise by $7,400. The $20,600 increase in C/QPP benefits is offset by a $9,100 reduction in GIS, a $2,200 increase in income taxes, and a $1,800 increase in C/QPP contributions (see the third column of figures in Table 4).

Since C/QPP contributions do not cover the costs of C/QPP benefits (even with the scheduled increase in contribution rates), both the SQ and HP policy scenarios entail intergenerational transfers; they are not fiscally neutral in a lifecycle sense. It would be mechanically straightforward to set contributions to the entry age normal rate. However, it is not clear that this would be very useful. First, this would not change the distributional results to be

TABLE 4: Per Capita Cohort Lifecycle Earnings, Income Taxes, and Public Pensions under the Status Quo (SQ) and with the PTF Homemaker Pension Proposal (HP)

Income, Tax, and Transfer Item	Core Adults		All Adults	
	Females ($000s)	Males ($000s)	Amount ($000s)	Percent of Total Earnings
Contributory Earnings	323.5	512.4	418.0	57.9
Total Earnings	482.4	960.5	721.5	100.0
Old Age Security	56.8	40.3	48.6	6.7
GIS - SQ	35.5	20.9	28.2	3.9
- HP	23.4	14.9	19.1	2.6
C/QPP - SQ				
Contributions	-5.8	-9.2	-7.5	
Retirement	45.3	39.5	42.4	} 7.8
Survivors	22.0	6.1	14.0	
C/QPP - HP				
Contributions	-6.6	-12.1	-9.3	
Retirement	67.5	50.5	59.0	} 10.7
Survivors	26.0	10.0	18.0	
Income Tax - SQ	-96.0	-261.8	-178.9	24.8
- HP	-99.6	-262.7	-181.1	25.1
Disposable Income - SQ	541.5	782.4	662.0	91.7
- HP	551.3	787.6	669.4	92.7

Source: LIPPS model on sample of 2500.

Note:
- Disposable income is net of unemployment insurance premiums and family allowance benefits as well as the items shown.
- GIS benefits are based on the assumption of zero private saving and private pension coverage. They would be lower if individuals received any private investment or pension income post-retirement.

reported below very much. Second, it would still leave the cohort in an ambiguous postion with regard to intergenerational transfers because there still would be a net intergenerational flow from the cohort via income taxes less OAS and GIS transfers, and no account has been taken of government services.

A final set of points from Table 4 concerns OAS and GIS. Contrary to the originally stated intention when the GIS was introduced, it will not phase itself out when the C/QPP are mature. (However, since its inception in 1966, the GIS program has been enriched and extended a number of times.) Indeed, even with a substantial increase in the size of the C/QPP targetted to those with low post-retirement incomes, i.e. the HP proposal, the GIS would still remain sizeable at 2.6% of per capita total lifetime earnings.

More generally, it may be noted that the OAS and GIS under the status quo together are one-third larger than the C/QPP even when fully mature (10.6% versus 7.8% of per capita total lifetime earnings). These figures are, however, very sensitive to the indexing assumptions. For example, if OAS remains CPI indexed and real wages grow on average by about 1.5% per year, OAS would be about halved. In turn, this would amount to a cut of about $25,000 in lifecycle income -- more than enough to offset the enlargement in the C/QPP attributable to the PTF homemaker pension package.

The PTF Homemaker Pension and Its Constituents

The overall PTF homemaker pension package can be broken down into three main groups of initiatives: credit splitting, changes to the dropout provisions, and the homemaker pension per se -- the imputation of earnings for C/QPP benefit purposes for people who are homemakers. Table 5 shows how these three constituent sets of policy changes each affect public pension benefits.

This breakdown is notable in the context of the latest report of the CPP Advisory Committee (1987) which recommended that the full homemaker pension package be rejected, but that credit splitting be adopted.

Table 5 shows that modifying the status quo scenario to add only credit splitting (the second column) would have a very small impact on per capita lifecycle incomes. This is due in part to the fact that the C/QPP already offer pension splitting (i.e. averaging of pension cheques to retired spouses). In fact, the only reason there is any increase in C/QPP benefits with credit splitting is the effective shift in credits (i.e. pensionable earnings) from higher-income, shorter-lived males to lower-income, longer-lived females.

More precisely, credit splitting increases retirement pensions for females by about $3,600. However, at the same time, it reduces retirement pensions for males, and survivor pensions for females, and increases survivor pensions for males. The net impact is about a $1,200 per capita increase in lifecycle C/QPP benefits. In turn, associated increases in income taxes and reductions in GIS result in a net increase in per capita lifecycle disposable income of only $200.

Changing the dropout provisions with credit splitting already in place (shown in the third column of Table 5) has a more substantial impact. Removing the child rearing dropout and giving everyone the general ability to drop out 25% rather than 15% of the lowest earning years between ages 18 and 65 increases per capita C/QPP benefits (retirement plus survivor, males plus

TABLE 5: Per Capita Cohort Lifecycle Taxes and Public Pensions Under the Status Quo (SQ) and the PTF Homemaker Pension Proposal (HP) with Two Intermediate Reform Scenarios ($000s)

Income, Tax and Transfer Item	Status Quo (SQ)	Reform Scenario		
		SQ + Credit Splitting	+ Revised Dropout	+ Homemaker Pension = HP
Females				
Old Age Security	56.8	56.8	56.8	56.8
GIS	35.5	34.5	32.5	23.4
C/QPP - Retirement	45.3	48.9	51.9	67.7
- Survivors	22.0	20.8	21.5	26.0
- Both	67.3	69.7	73.4	93.7
- Change		2.4	3.7	20.3
Income Tax	-96.0	-96.5	-97.1	-99.6
Disposable Income	541.5	542.3	543.6	551.3
Males				
Old Age Security	40.3	40.3	40.3	40.3
GIS	20.9	20.8	19.4	14.9
C/QPP - Retirement	39.5	37.6	41.2	50.5
- Survivors	6.1	7.9	7.9	10.0
- Both	45.6	45.5	49.1	60.5
- Change		-0.1	3.6	11.4
Income Tax	-261.8	-261.9	-262.3	-262.7
Disposable Income	782.4	782.1	783.9	787.6
All Adults				
Old Age Security	48.6	48.6	48.6	48.6
GIS	28.2	27.6	26.0	19.1
C/QPP - Retirement	42.4	43.3	46.6	59.0
- Survivors	14.0	14.3	14.7	18.0
- Both	56.4	57.6	61.3	77.0
- Change		1.2	3.7	15.7
Income Tax	-178.9	-179.2	-179.7	-181.1
Disposable Income	662.0	662.2	663.8	669.4

females) by $3,700. Again the net effect on lifecycle consumption, once offsetting reductions in GIS and increased income taxes are taken into account, is considerably less, averaging $1,600 per capita.

Finally, adding the homemaker pension with credit splitting and the revised dropout provisions already in place (shown in the fourth column) has an even larger impact. The addition of imputed earnings of up to half the average wage in years where an adult is deemed to be a homemaker results in about three times as great an increase in C/QPP benefits and in lifecycle disposable income as pension splitting and the revised dropout provisions combined.

The PTF Homemaker Pension Proposal - Impacts by Demographic Status

With Table 6, we begin displaying the distributional impact of the HP proposal. This is a non-trivial task because of the complexity of the underlying sample of family life histories. In Table 6, the focus is on core adults disaggregated first by sex, and then by their marital history. People are first distinguished by their marital status at the point they enter retirement, age 65. Individuals who are single at age 65 are then further disaggregated by whether or not they were ever married, while those who are married at age 65 are broken down by whether it is their first or second marriage.

These breakdowns account for all the columns in the table. As already noted in Table 2, all but 14.6% of women and 24.6% of men survive to age 65 (given that they have survived to age 18). Table 6 shows further that 14.8% of women and 22.1% of men can expect to enter retirement in their second marriage, for example, as shown in the first row.

The top half of Table 6 shows the impacts of the SQ and HP policy scenarios from an individual perspective - only the earnings, taxes, and transfers of the person in question are considered, in isolation of any spouse(s) they may have or have had. In contrast, the bottom half of the table presents results from a family perspective. The person's earnings, taxes, and transfers on a year by year basis are taken to be their own plus those of their spouse for those years when they have a spouse (in either a first or second marriage, i.e. either a core or ancillary adult as appropriate). For example, from an individual perspective, women who enter retirement single but having been married previously (i.e. in the second column) have average annual pre-retirement earnings of $10,300. However, this group's own earnings plus the earnings of their husband(s) for the years they were married averaged $24,800 -- the "family" rather than the "individual" perspective.

From both the individual and family perspectives, the HP proposal appears to be equally beneficial to men and women, about $500 or $600 per year from an individual perspective and about $800 per year from a family perspective. This is not surprising, given that part of the package of proposals is credit splitting.

It may at first seem strange that never-married men would benefit from the HP package, but this is due to the enrichment of the general dropout provision in the C/QPP, from 15% to 25% of the lowest earning years. Never-married women benefit both from the enrichment of the general dropout and the homemaker pension since it is assumed that mothers always retain custody of children born out of wedlock. Overall, however, benefits measured in terms of changes in disposable income are concentrated among ever-married people.

TABLE 6: Lifecycle Impacts of Canada's Public Pension System by Demographic Status

Sex	Female					Male				
Marital Status at Age 65	Single		Married			Single		Married		
Number of Marriages	None	1 or 2	One	Two	All*	None	1 or 2	One	Two	All*
Percent of Cases	10.0	30.1	30.6	14.6	85.4	8.4	11.0	33.6	22.1	75.4
Individual Perspective										
Annualized Averages ($000)										
Pre-Retirement, SQ										
Earnings	10.9	10.3	11.0	10.7	10.7	22.3	20.2	21.7	22.9	21.9
Disposable Income	8.9	8.7	8.7	8.5	8.7	15.1	14.5	15.6	16.0	15.5
Post-Retirement, SQ										
OAS/GIS	6.6	5.9	5.1	5.1	5.6	6.2	5.8	4.9	5.0	5.3
C/QPP	2.7	4.1	4.0	4.0	3.9	3.6	5.3	3.8	3.9	3.9
Disposable Income	9.3	9.9	8.9	8.9	9.3	9.7	9.9	8.6	8.7	9.0
Post-Retirement, HP										
OAS/GIS	6.3	5.1	4.2	4.3	4.8	6.0	5.1	4.2	4.3	4.6
C/QPP	3.4	5.9	5.8	5.8	5.5	4.0	5.8	5.3	5.5	5.2
Disposable Income	9.6	10.5	9.6	9.7	9.9	9.8	10.4	9.2	9.3	9.5
Change in Post-Reform										
Disposable Income	0.3	0.6	0.7	0.8	0.6	0.1	0.5	0.6	0.6	0.5
Replacement Ratios (%)										
SQ	104.7	112.7	102.3	104.2	106.6	63.9	68.1	55.4	54.6	58.1
HP	108.4	120.7	110.3	113.3	114.0	64.8	71.8	58.9	58.6	61.5
Change	3.7	7.3	8.0	9.1	7.4	0.9	3.7	3.5	4.0	3.4
Family Perspective										
Annualized Averages ($000)										
Pre-Retirement, SQ										
Earnings	10.9	24.8	32.2	29.9	26.6	22.3	27.3	31.3	31.4	29.7
Disposable Income	8.9	18.9	23.8	21.9	19.9	15.1	20.2	23.1	22.6	21.6
Post-Retirement, SQ										
OAS/GIS	6.6	5.9	7.9	7.9	7.0	6.2	5.8	8.7	8.8	7.9
C/QPP	2.7	4.1	6.0	6.1	4.9	3.6	4.3	6.4	6.2	5.6
Disposable Income	9.3	9.9	13.7	13.7	11.8	9.7	9.9	14.8	14.8	13.3
Post-Retirement, HP										
OAS/GIS	6.3	5.1	6.7	6.7	6.1	6.0	5.1	7.5	7.6	6.9
C/QPP	3.4	5.9	8.5	8.5	6.9	4.0	5.8	8.8	8.8	7.6
Disposable Income	9.6	10.5	14.7	14.7	12.6	9.8	10.4	15.8	15.9	14.1
Change in Post-Reform										
Disposable Income	0.3	0.6	1.0	1.0	0.8	0.1	0.5	1.0	1.1	0.8
Replacement Ratios (%)										
Unadjusted										
SQ	104.7	52.2	57.5	62.7	59.2	63.9	48.9	64.1	65.7	61.3
HP	108.4	55.5	61.7	67.2	63.1	64.8	51.6	68.8	70.6	65.3
Change	3.7	3.3	4.2	4.5	3.9	0.9	2.7	4.7	4.9	4.0
RAU Adjusted										
SQ	126.2	75.5	75.9	75.0	78.6	63.9	65.1	75.3	69.3	71.1
HP	130.7	80.5	81.5	80.4	83.8	64.8	68.6	80.7	74.5	75.7
Total Change	4.5	5.0	5.6	5.4	5.2	0.9	3.5	5.4	5.2	4.6
Incremental Changes										
Splitting	0.0	0.5	0.2	0.4	0.3	0.0	0.2	-0.1	0.0	0.0
Dropout	1.0	0.7	1.0	1.0	0.9	0.9	0.7	1.0	1.2	1.0
Homemaker	3.5	3.8	4.4	4.0	4.0	0.0	2.6	4.5	4.0	3.6

* All but those core adults who die before reaching age 65.

Given that a major objective of public pensions is to provide replacement of pre-retirment earnings, an important measure of the impact of the HP proposal is its effect on replacement ratios. These ratios have been computed three different ways in Table 6. First, they have been computed from the individual perspective, where the replacement ratio is defined simply as the ratio of post-retirment disposable income to pre-retirement disposable income. Thus, the numerator of the ratio is the individual's OAS plus GIS plus C/QPP less any income taxes payable; while the denominator is earnings plus any pre-retirement survivor pension minus C/QPP contributions and income taxes. For both the numerator and the denominator, the entire pre- and post-retirement phases are considered, and annualized dollar flows are used. (An intermediate phase where one spouse is 65 or over while the other is under age 65 is omitted.)

The unadjusted replacement ratio from the family perspective is computed in exactly the same way except that this time, the earnings, taxes and transfers are those of the person in question plus those of their spouse(s) during the years they are married. Arguably, the family perspective is superior to the individual perspective. A woman who had zero earnings of her own but who was married most of her life to a man with earnings of $100,000 is unlikely to have been poor. The individual perspective in this case would treat her as having had zero pre-retirement earnings, while from the family perspective she would have had $100,000.

Of course, this latter assumption is not quite right either. If the husband and wife actually pooled their resources during the marriage, she probably maintained a lifestyle at least equivalent to a single individual with an income of $50,000. In fact, because of the economies of scale in living together, her lifestyle might have been equivalent to somewhat more than this. This latter notion is captured in the EAU adjusted replacement ratio, where EAU is an abbreviation for equivalent adult units. This ratio is similar to the unadjusted ratio except that disposable income from the family perspective is divided each year by the number of equivalent adult units before being averaged over the pre- and post-retirement phases of the lifecycle.

There is no hard and fast standard for determining EAU's. For purposes of this analysis, it has simply been assumed that a family with two adults consists of one and two-thirds EAU's, and each child is one-third of an EAU.

Examining the resulting replacement ratios for a woman who enters retirement single but having previously been married, for example, we see that under the current public pension system, she can expect to have a post-retirement disposable income from an individual perspective about 12.7% greater than what she had prior to retirement. However, if no adjustment is made for the larger average family size pre-retirement but the extra income of her ex- or deceased husband is taken into account (i.e the unadjusted replacement ratio from the family perspective), then her replacement ratio looks like 52.2%. Finally, if we do take some account of her larger average family size prior to retirement (i.e. the EAU adjusted replacement ratio), it looks like her standard of living on average after retirement was 75.5% of what she enjoyed prior to retirement. (For those who are married at retirment, the EAU adjustment also reweights incomes post-retirement to account for the phase when both pensioners are alive as compared to the subsequent phase when there is one surviving spouse.)

Looking across the row showing family perspective status quo EAU adjusted replacement ratios, women systematically fare better than men. While ever-married men fare better than never-married men, the opposite is true among

women. Finally, in most cases it appears that if people did no private saving for retirement and did not belong to a private pension plan, they could expect a 20 to 35% drop in their standard of living after retirement. From this viewpoint, then, the public pension system does not appear to provide adequate replacement income by itself.

Continuing to focus on the family perspective EAU adjusted replacement ratios at the bottom of Table 6, women do benefit somewhat more than men from the HP reform package - a 5.2 versus a 4.6 percentage point improvement. Single parents and divorced or widowed women benefit relatively more than their male counterparts (columns 1 and 2 versus 6 and 7), but not as much as married women in terms of the amount of improvement (columns 3 and 4).

Another general conclusion from the analysis is that while we may think of homemaking as principally an activity of women, the homemaker pension package proposed by the PTF is perhaps surprisingly level in the distribution of benefits between men and women. This result is almost certainly attributable to the credit splitting component of the reform proposal. In turn, credit splitting is entirely in accord with recent trends in family law reform which recognize the joint ownership of income and wealth earned and accumulated in a marriage.

The last three rows of Table 6 decompose the PTF package into the same three constituent sets of reforms as were shown in Table 5. Credit splitting is primarily of benefit to ever-married females in terms of family perspective, EAU adjusted replacement ratios. Given credit splitting, the changes to the dropout provisions have almost identical impacts across sex and lifecycle marital status categories. Finally, given credit splitting and the revised dropout provisions, adding the homemaker pension per se benefitted everyone except never-married males (because they were assumed never to have custody of children born out of wedlock, unlike never-married females). As in Table 5, the homemaker pension itself is the most significant part of the PTF package in terms of the magnitude of its impact. It is generally associated with about a four percentage point increase in EAU adjusted replacement ratios.

The reader should, however, be reminded of the assumption that the OAS is indexed to average wage growth. This assumption does not affect the <u>changes</u> in post-reform disposable income replacement ratios attributable to the PTF package; it does affect the <u>levels</u>. As a rough approximation of the impact of this assumption compared with current legislation where OAS is indexed to the consumer price index, OAS would be reduced by about one-half in average dollar terms, resulting in turn in a 15 to 25 percentage point decline in replacement ratios.

<u>The PTF Homemaker Pension Proposal - Impacts by Lifetime Income Group</u>

Tables 7 and 8 show the simulated distributional impact of the HP proposal by lifetime earnings group for women and men respectively. These tables allow an assessment of the vertical equity of the reform package. The rows of the two tables are identical to those in Table 6.

Starting with Table 7, it may be noted that the poorest 10% of women in terms of their lifetime earnings have (according to the underlying DEMOGEN simulation results) average annual earnings of $700. Their average disposable income is twice this, however, at $1,400. The difference is ascribable to refundable child tax credits in the income tax system, family allowance

TABLE 7: Lifecycle Impacts of Canada's Public Pension System by Lifetime Earnings - Females

	Annualized Lifetime Earnings - Percentile Group										
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-95	95-100
Individual Perspective											
Annualized Averages ($000)											
Pre-Retirement, SQ											
Earnings	0.7	2.9	4.6	6.3	7.9	9.6	11.5	14.2	17.6	23.4	39.2
Disposable Income	1.4	3.2	4.5	5.8	7.1	8.4	9.7	11.4	13.8	17.4	26.1
Post-Retirement, SQ											
OAS/GIS	6.2	6.2	6.0	5.9	5.8	5.5	5.4	4.9	4.9	4.7	4.7
C/QPP	2.3	2.5	2.9	3.2	3.5	4.1	4.4	5.0	5.2	5.7	5.6
Disposable Income	8.5	8.7	8.9	9.0	9.2	9.4	9.5	9.6	9.8	10.0	10.0
Post-Retirement, HP											
OAS/GIS	5.0	5.2	5.1	5.0	5.1	4.9	4.8	4.3	4.4	4.2	4.2
C/QPP	5.0	4.8	4.9	5.0	5.0	5.4	5.6	6.3	6.4	6.8	6.7
Disposable Income	9.7	9.6	9.7	9.7	9.8	9.9	10.0	10.1	10.2	10.3	10.3
Change in Post-Reform											
Disposable Income	1.2	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.4	0.3	0.3
Replacement Ratios (%)											
SQ	594.1	273.7	199.1	154.5	130.7	112.4	98.6	84.3	71.5	57.3	38.2
HP	678.1	303.7	216.7	167.0	139.2	118.7	103.2	88.3	74.3	59.3	39.5
Change	4.0	30.0	17.6	12.5	8.5	6.3	4.6	4.0	2.8	2.0	1.3
Family Perspective											
Annualized Averages ($000)											
Pre-Retirement, SQ											
Earnings	5.1	10.0	13.5	17.1	20.5	24.3	28.7	34.7	43.0	54.9	83.0
Disposable Income	5.0	9.0	11.7	14.2	16.7	19.2	22.0	25.8	31.0	37.4	52.1
Post-Retirement, SQ											
OAS/GIS	7.8	7.5	7.5	7.2	7.1	7.0	6.9	6.6	6.4	6.5	6.3
C/QPP	1.6	2.8	3.8	4.3	5.0	5.5	6.0	6.4	6.9	7.3	7.7
Disposable Income	9.4	10.3	11.2	11.4	11.9	12.3	12.7	12.7	12.9	13.3	13.4
Post-Retirement, HP											
OAS/GIS	6.9	6.5	6.5	6.2	6.1	6.0	6.0	5.7	5.5	5.6	5.5
C/QPP	3.6	4.7	5.9	6.4	7.0	7.6	8.0	8.3	8.8	9.1	9.3
Disposable Income	10.4	11.1	12.1	12.2	12.7	13.0	13.4	13.3	13.5	13.9	14.0
Change in Post-Retirement											
Disposable Income	1.0	0.8	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6
Replacement Ratios (%)											
Unadjusted											
SQ	187.7	113.4	95.8	79.8	71.4	64.0	57.1	49.1	41.6	35.6	25.8
HP	207.1	123.2	103.7	85.9	76.2	68.0	61.0	51.6	43.8	37.3	26.9
Change	19.4	9.8	7.9	6.1	4.8	4.0	3.3	2.5	2.2	1.7	1.3
EAU Adjusted											
SQ	234.0	144.1	124.7	105.7	95.6	85.4	77.2	66.3	58.2	48.6	34.6
HP	258.2	156.6	134.9	113.9	102.0	90.7	81.7	69.8	61.2	50.9	36.1
Change	24.2	12.5	10.2	8.2	6.4	5.3	4.5	3.5	3.0	2.3	1.5

TABLE 8: Lifecycle Impacts of Canada's Public Pension System by Lifetime Earnings - Males

	Annualized Lifetime Earnings - Percentile Group										
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-95	95-100
Individual Perspective											
Annualized Averages ($000)											
Pre-Retirement, SQ	2.9	6.7	9.6	12.5	15.4	18.8	23.4	28.8	37.1	46.9	81.1
Earnings	2.7	5.8	7.9	9.9	11.9	14.3	17.2	20.5	25.5	30.9	47.6
Disposable Income											
Post-Retirement, SQ											
OAS/GIS	6.4	6.0	5.7	5.5	5.2	4.9	4.9	4.8	4.6	4.6	4.6
C/QPP	1.5	2.3	3.0	3.7	3.9	4.5	4.7	4.9	5.1	5.2	5.3
Disposable Income	7.9	8.3	8.6	9.0	9.1	9.2	9.4	9.5	9.4	9.5	9.6
Post-Retirement, HP											
OAS/GIS	5.5	5.2	5.0	4.8	4.7	4.3	4.3	4.3	4.1	4.1	4.1
C/QPP	3.5	4.0	4.4	5.0	5.1	5.7	5.9	6.0	6.3	6.2	6.5
Disposable Income	8.9	9.1	9.3	9.5	9.6	9.6	9.7	9.8	9.8	9.8	10.0
Change in Post-Reform											
Disposable Income	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4
Replacement Ratios (%)											
SQ	295.9	143.7	109.0	91.1	75.9	64.3	54.7	46.3	37.1	30.7	20.2
HP	332.5	156.4	116.7	96.3	79.5	67.3	56.9	47.9	38.5	31.7	21.0
Change	36.6	12.7	7.7	5.2	3.6	3.0	2.2	1.6	1.3	1.0	0.8
Family Perspective											
Annualized Averages ($000)											
Pre-Retirement, SQ											
Earnings	6.5	12.0	15.9	19.3	23.2	27.2	32.1	38.2	47.0	58.6	93.4
Disposable Income	5.9	10.2	13.1	15.6	18.2	20.7	23.9	27.7	33.0	39.5	56.7
Post-Retirement, SQ											
OAS/GIS	8.8	8.7	8.3	8.1	7.8	7.8	7.4	7.2	7.4	7.4	6.8
C/QPP	1.9	3.3	4.2	5.0	5.9	6.1	6.6	7.4	7.7	8.2	8.1
Disposable Income	10.7	12.0	12.5	13.0	13.5	13.6	13.8	14.3	14.8	15.2	14.3
Post-Retirement, HP											
OAS/GIS	7.7	7.5	7.2	7.1	6.8	6.8	6.5	6.4	6.6	6.7	6.1
C/QPP	4.2	5.8	6.6	7.1	7.9	8.0	8.6	9.2	9.6	10.0	9.6
Disposable Income	11.8	13.2	13.5	13.9	14.2	14.4	14.5	14.9	15.4	15.9	14.9
Change in Post-Retirement											
Disposable Income	1.1	1.2	1.0	0.9	0.7	0.8	0.7	0.6	0.6	0.7	0.6
Replacement Ratios (%)											
Unadjusted											
SQ	180.3	118.1	95.1	83.7	75.9	65.8	57.6	51.6	44.8	38.6	25.3
HP	199.3	129.7	103.1	89.5	78.4	69.5	60.8	53.9	46.9	40.2	26.3
Change	19.0	11.6	8.0	5.8	2.5	3.7	3.2	2.3	1.1	1.6	1.0
EAU Adjusted											
SQ	202.8	132.4	110.2	96.1	87.6	76.0	68.3	61.2	51.9	45.1	29.2
HP	224.3	145.4	119.5	102.8	92.9	80.3	72.1	63.9	54.4	47.0	30.3
Change	21.5	13.0	9.3	6.7	5.3	4.3	3.8	2.7	2.5	1.9	1.1

benefits and pre-retirement survivor pensions from the C/QPP. Women in the sixth decile, for example, had average earnings of $9,600. If, however, women are sorted by their earnings from a family rather than an individual perspective, then the bottom half of Table 7 shows sixth decile women having average pre-retirement family earnings of $24,300. Women in the top 5% of the income spectrum average $39,200 on their own, and $83,000 when they and their husbands' earnings are considered jointly.

Turning next to look at the status quo post-retirement income from the family perspective, we see that OAS/GIS averages $7,800 in the bottom decile and declines gradually to $6,300 among the top 5% as one moves up the income spectrum. This absolute dollar decline is the result of the income testing of the GIS. As the next row shows, C/QPP benefits increase from an average of $1,600 in the bottom decile to $7,700 among the top 5%, and every extra dollar of C/QPP reduces GIS entitlement by $0.50. It should be recalled that these post-retirement incomes are averaged over two post-retirement phases for most individuals - the first where both the individual and his or her spouse are alive, and the second where just the surviving spouse is alive. As can be inferred from Table 2 above, this latter phase can often be longer than the former.

A key result shown in the third last line of this table is that the bottom 40% of the population of women can, under the status quo public pension system, expect higher disposable incomes after they retire than they enjoyed prior to retirement without any private saving for retirement. In the bottom five decile groups, the EAU adjusted replacement ratios from the family perspective are all greater than 100%.

A second key result is that the HP reform package appears unequivocally progressive. Improvements in post-retirment disposable income, after taking account of interactions of the C/QPP benefit increases with GIS and the income tax system, average about $900 per year among the bottom 30% of women, and decline gradually thereafter. There still is a $600 average benefit improvement among the top 5% of women. This absolute progressivity of the reform package corresponds to an even stronger relative progressivity shown by the changes in the EAU adjusted replacement ratios in the very last row.

Table 8 gives the corresponding figures for men. From an individual perspective, men in the sixth decile earned an average of $18,800 while from a family perspective sixth decile men earned an average of $27,200. The top 5% of men viewed individually earned an average of $81,100, according to the underlying DEMOGEN simulation, and had earnings of $93,400 when considered together with their wives.

Looking at status quo post-retirement incomes from a family perspective in Table 8, men have higher OAS/GIS than women; benefits range from $8,800 in the bottom decile down to $6,800 among the top 5%. This is a result of the fact that over the total post-retirement period, men tend to spend more of their years living with their wives than women spend with their husbands, and hence more time in a family entitled to two OAS cheques. In turn, this is simply a reflection of the greater longevity of women. Both because of their shorter longevity (and hence greater relative likelihood of receiving retirement rather than survivor pensions) and their higher pre-retirement earnings, men receive larger C/QPP benefits. These range from $1,900 in the bottom decile to $8,100 among the top 5%. These higher C/QPP benefits would tend to lower GIS entitlements, so the observation above that men are more likely to live in families

after retirement where there are two OAS cheques is understated by the OAS/GIS figures where OAS and GIS benefits are combined.

From a male perspective, the public pension system does not do as good a job at providing adequate replacement income by itself. The EAU adjusted replacement ratios in the third last line of Table 8 are lower for men than they are in Table 7 for women. This is to be expected because of the flat rate nature of the OAS benefit post-retirement, and the higher average earnings of men prior to retirement.

Another way to put this is that from the perspective of replacement adequacy (as well as from an anti-poverty perspective), the OAS is relatively more important for women than for men. Again these results are sensitive to the indexing assumption for OAS. Under the current legislation scenario of CPI rather than average wage indexing, OAS/GIS benefits would be reduced by about one-third of the dollar amounts shown. (OAS itself would be about halved.) The changes in dollar levels of disposable income and replacement ratios attributable to the PTF package of reforms would be relatively unaffected, but the levels of the SQ and HP replacement ratios would both be 15 to 25 percentage points lower.

Given these results, one might wonder why women's groups have put so much of their effort into lobbying for improvements in the C/QPP instead of the OAS. Perhaps it is precisely because women see the C/QPP as a man's program, and because it is constitutionally more difficult to amend, they would rather see OAS-like improvements embedded in the C/QPP. On the other hand, women stand to lose much more than men if the OAS is allowed to fall relative to the average wage - contrary to what has been assumed in these simulations, but in line with the long term expected mpact of current legislation.

Finally, Tables 7 and 8 provide a useful perspective for considering the proposal on which both labour and women's groups agreed, namely the doubling of the C/QPP. Focusing on EAU adjusted replacement ratios, individuals with family perspective incomes in the $25,000 to $40,000 range (i.e. women in the sixth to ninth deciles and men in the fifth to eighth deciles) can expect replacement ratios in the 60 to 85% range, with higher ratios at lower incomes. These observations suggest that a simple doubling of the C/QPP replacement ratio from 25% to 50% of pre-retirement earnings would not be very effective in terms of targetting. People who can already expect more than 100% net replacement would have even higher replacement ratios, while those in this group with the lowest expected replacement ratios would still be left expecting well below 100% net replacement. These results are very much in line with the earlier conclusions of the Lazar Report (1979), which suggested instead that to achieve closer to 100% net replacement across a broader range of the income spectrum, a better approach would be to increase the maximum pensionable earnings to one and one-half times the average wage, and to increase the gross replacement rate in the C/QPP to about 40%.

Concluding Comments

This paper has presented an analysis of the expected lifetime redistributive impact of a proposal to provide homemaker pensions under the C/QPP. The proposal itself represents the recent entry of a new interest group in the public debate on pension policy in Canada - women's groups have added their voices to the traditional business and labour voices.

The proposal is analytically challenging. As a pension proposal, it only makes sense to analyse it in a lifecycle context. Since the proposal is targetted on women in relation to both their labour market and demographic behaviour, a rigourous analysis requires longitudinal microdata that reasonably reflect the joint dynamics of earnings, marriage, fertility, and divorce. To meet this need, a monte carlo microsimulation model was developed, DEMOGEN, in order to be able to produce realistic, albeit synthetic, samples of complete family life histories.

The output of a DEMOGEN simulation was then used as an input to a policy-oriented microsimulation model of Canada's public pension system. Both the status quo and the homemaker pension proposals were simulated for a sample of a single birth cohort under the simplifying assumption of zero long run steady state growth and zero discount and interest rates. These assumptions are equivalent to assuming that all taxes and pensions are exactly indexed to the growth in average wages. They also implicitly assume that individuals, when acting collectively to plan or evaluate their public pensions, use a discount rate equal to the growth rate of average wages.

The first main result of the analysis is that the long run or entry age normal cost of the current C/QPP is about 14% of contributory earnings, and 8.1% of total earnings. This can be contrasted with the non-contributory public transfers to the elderly, OAS and GIS, which if funded on an equivalent entry age normal basis would cost 10.9% of total cohort lifetime earnings. One conclusion is that in Canada, the relatively greater attention given to the C/QPP is out of line with its size in the current public pension system.

The homemaker pension proposal, if implemented, would increase the size of C/QPP benefits by just over one-third. However, it would increase disposable income by a much smaller amount. The increased C/QPP benefits would be accompanied by increased C/QPP contributions, reduced GIS, and increased income taxes.

While on average women would tend to benefit somewhat more than men from the homemaker pension, the more interesting result is just how similar the increases in post-retirement incomes for men and women would be. It would appear that the homemaker pension proposal is quite unisex in its impact. This is almost certainly the result of its being combined in a package with credit splitting.

From a vertical equity perspective, the proposal is progressive. This is true both in relative terms, with benefit improvements expressed as a proportion of lifetime earnings falling as one moves up the income spectrum, and in absolute dollar terms.

The reader should understand that the results just described are sensitive to the assumtions, particularly with respect to indexing and discounting. Contrary to the assumption underlying the results just reported, the OAS is not indexed to average wages and if nothing is done, it will decline in relative importance over the long run. Such a decline will have a much more serious impact on women than on men. It is thus somewhat difficult to understand why the women's movement in Canada has devoted so much effort to having their work in the home recognized in the earnings-related C/QPP, and have not given much attention to the flat rate OAS. They would seem to have traded symbolic recognition with unisex results for substantive results of much greater value.

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